



July 2015

NUCLEAR WEAPONS SUSTAINMENT

Improvements Made
to Budget Estimates,
but Opportunities
Exist to Further
Enhance
Transparency

Report Documentation Page			Form Approved OMB No. 0704-0188	
Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.				
1. REPORT DATE JUL 2015	2. REPORT TYPE	3. DATES COVERED 00-00-2015 to 00-00-2015		
4. TITLE AND SUBTITLE Nuclear Weapons Sustainment: Improvements Made to Budget Estimates, but Opportunities Exist to Further Enhance Transparency		5a. CONTRACT NUMBER		
		5b. GRANT NUMBER		
		5c. PROGRAM ELEMENT NUMBER		
6. AUTHOR(S)		5d. PROJECT NUMBER		
		5e. TASK NUMBER		
		5f. WORK UNIT NUMBER		
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) U.S. Government Accountability Office, 441 G Street NW, Washington, DC, 20548		8. PERFORMING ORGANIZATION REPORT NUMBER		
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)		10. SPONSOR/MONITOR'S ACRONYM(S)		
		11. SPONSOR/MONITOR'S REPORT NUMBER(S)		
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited				
13. SUPPLEMENTARY NOTES				
14. ABSTRACT				
15. SUBJECT TERMS				
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT Same as Report (SAR)	18. NUMBER OF PAGES 47
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified	19a. NAME OF RESPONSIBLE PERSON	

July 2015

NUCLEAR WEAPONS SUSTAINMENT

Improvements Made to Budget Estimates, but Opportunities Exist to Further Enhance Transparency

Why GAO Did This Study

DOD and DOE are undertaking an extensive, multifaceted effort to sustain and modernize U.S. nuclear weapons capabilities, which are aging and being deployed beyond their intended service lives. This effort is expected to take decades and cost hundreds of billions of dollars. Section 1043 of the National Defense Authorization Act for Fiscal Year 2012, as amended, requires the submission of an annual report to congressional committees on DOD's and DOE's plans for related matters, including 10-year budget estimates, and includes a provision that GAO review aspects of that report. In June 2014, GAO reviewed the July 2013 joint report and made recommendations to improve future reports, such as documenting the methodology used to create certain estimates and identifying its assumptions and limitations.

This report assesses the extent to which the May 2014 joint report provides (1) budget estimates that are consistent with the departments' internal funding and modernization plans and (2) complete and transparent information on the methodology used to develop the estimates.

What GAO Recommends

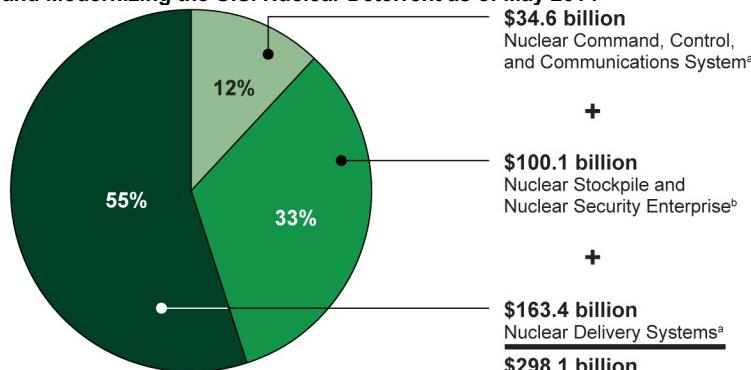
GAO recommends that future joint reports provide more thorough documentation of the methodologies used to develop the estimates and comparative information on changes in the estimates from the prior year. DOD and DOE generally agreed, but DOD noted that information on changes is not required. GAO continues to believe the recommendation is valid as discussed further in this report.

View [GAO-15-536](#). For more information, contact Joe Kirschbaum at (202) 512-9971 or kirschbaum@gao.gov or David Trimble at (202) 512-3841 or trimbled@gao.gov.

What GAO Found

The annual joint report submitted by the Department of Defense (DOD) and the Department of Energy (DOE) in May 2014 includes 10-year budget estimates for sustaining and modernizing U.S. nuclear weapons (see figure), and these estimates are generally consistent with internal funding and modernization plans, with a few exceptions. For example, GAO could not fully verify that DOD's command, control, and communications estimates were consistent with its internal funding plans, because DOD did not document methodological assumptions and limitations associated with these estimates as GAO had previously recommended. Similarly, DOE's estimates are generally consistent with its internal plans, with two exceptions; for example, the budget estimate for the first five years of the cruise missile warhead life extension program is lower than the cost range in DOE's internal plans.

Figure: Departments of Defense (DOD) and Energy (DOE) 10-Year Estimates for Sustaining and Modernizing the U.S. Nuclear Deterrent as of May 2014



Source: GAO analysis of Department of Defense (DOD) and Department of Energy (DOE) data. | GAO-15-536

^aDOD provides estimates for the nuclear command and control system, which includes early warning radars, aircraft, and communications networks, and for delivery systems, which consist of a variety of platforms such as heavy bombers, air-launched cruise missiles, and ballistic-missile submarines.

^bDOE provides estimates for the nuclear weapons stockpile (seven types of weapons) and the nuclear security enterprise (eight geographically dispersed sites).

The 2014 report includes information that was not included in the 2013 report—such as estimates for the Air Force's new long range bomber and some DOE construction projects—but opportunities exist to further enhance transparency. DOD did not describe in detail the methodology used to develop some estimates, even though the Air Force and Navy used different methodologies for estimates of sustaining and modernizing nuclear delivery systems, and the Air Force changed the methodology it had used previously. Also, DOD's estimates for nuclear delivery systems increased by about 40 percent from last year's report, due in part to changes in the methodologies used to develop them, but the report does not provide comparative information about changes in the estimates from those in the 2013 report. Further, DOE inadvertently omitted budget estimates in fiscal years 2020 through 2024 for two planned activities, thus understating its estimates by \$1.6 billion. Without thorough documentation of methodologies and comparative information, it may be difficult for Congress to understand the basis for the estimates or assess long-term affordability when allocating resources.

Contents

Letter		1
Background		5
The Joint Report's Budget Estimates Are Generally Consistent with Both Departments' Internal Funding Plans and Long-Term Nuclear Modernization Plans, with a Few Exceptions		8
The May 2014 Joint Report Contains More Complete Information than the July 2013 Joint Report, but Opportunities Exist to Further Improve Transparency		18
Conclusions		29
Recommendations for Executive Action		30
Agency Comments and Our Evaluation		30
Appendix I	Objectives, Scope, and Methodology	35
Appendix II	Comments from the Department of Defense	39
Appendix III	Comments from the Department of Energy	41
Appendix IV	GAO Contacts and Staff Acknowledgments	42
Tables		
Table 1: Department of Defense's (DOD) 5-Year and 10-Year Nuclear Delivery System Sustainment and Modernization Budget Estimates as of May 2014		11
Table 2: Department of Energy's (DOE) 5-Year and 10-Year Nuclear Modernization Budget Estimates as of May 2014		14
Table 3: Changes in the Department of Defense's (DOD) 5-Year and 10-Year Sustainment and Modernization Estimates for Nuclear Delivery Systems from the June 2013 to the May 2014 Joint Report		25
Table 4: Changes in the Department of Energy's (DOE) 5-Year and 10-Year Modernization Estimates for Nuclear Security Enterprise as of September 2014 ^a		27

Figure

Figure 1: Departments of Defense (DOD) and Energy (DOE) 10-Year Estimates for Sustaining and Modernizing the U.S. Nuclear Deterrent as of May 2014

9

Abbreviations

DISA	Defense Information Systems Agency
DOD	Department of Defense
DOD CIO	Department of Defense Chief Information Officer
DOE	Department of Energy
FYDP	Future Years Defense Program
FYNSP	Future Years Nuclear Security Program
ICBM	Intercontinental Ballistic Missile
NC3	Nuclear Command, Control, and Communications
NNSA	National Nuclear Security Administration
SLBM	Submarine-launched Ballistic Missile
SSBN	Ship Submersible Ballistic Nuclear (ballistic missile submarine)

This is a work of the U.S. government and is not subject to copyright protection in the United States. The published product may be reproduced and distributed in its entirety without further permission from GAO. However, because this work may contain copyrighted images or other material, permission from the copyright holder may be necessary if you wish to reproduce this material separately.



U.S. GOVERNMENT ACCOUNTABILITY OFFICE

441 G St. N.W.
Washington, DC 20548

July 30, 2015

Congressional Committees

The Department of Defense (DOD) and the Department of Energy (DOE) are undertaking an extensive, multifaceted effort to sustain and modernize U.S. nuclear weapons capabilities, including the nuclear weapons stockpile; the research and production infrastructure; nuclear weapons delivery systems; and the nuclear command, control, and communications (NC3) system.¹ The strategic missiles, submarines, aircraft, and the nuclear weapons carried by these delivery systems are aging and being deployed beyond their intended service lives. Key National Nuclear Security Administration (NNSA)² nuclear weapons research, development, and production facilities date back to the 1940s and 1950s, and, according to the 2010 *Nuclear Posture Review Report*, require modernization to ensure a safe, secure, and effective nuclear arsenal for as long as such weapons exist.³ As shown by DOD and DOE estimates, sustainment and modernization efforts are expected to cost billions of dollars over the next decade.

Section 1043 of the National Defense Authorization Act for Fiscal Year 2012, as amended, requires that the President, in consultation with the Secretary of Defense and the Secretary of Energy, submit a report on the plan for the nuclear weapons stockpile, complex,⁴ delivery systems, and

¹The nuclear weapons stockpile consists of seven weapon types. Nuclear delivery systems consist of a variety of platforms including heavy bombers, air-launched cruise missiles, and ballistic-missile submarines operated by the Air Force and Navy. The NC3 system consists of satellites, early warning radars, aircraft, communications networks, and other systems that are managed by the Air Force, Navy, DISA, and other organizations.

²NNSA is a separately organized agency within DOE that is responsible for the management and security of DOE's nuclear weapons, nuclear nonproliferation, and naval reactor programs.

³Department of Defense, *Nuclear Posture Review Report* (Washington, D.C.: Apr. 6, 2010).

⁴Except when referencing the statutory requirement, this report hereafter refers to the "nuclear weapons complex" as the "nuclear security enterprise," which consists of eight geographically dispersed government-owned, contractor-operated sites, such as laboratories and production plants.

command and control system for each of fiscal years 2013 through 2019.⁵ DOD and DOE develop this annual report, which we refer to as the joint report.⁶ This joint report is to include nuclear sustainment and modernization plans as well as associated budget estimates for the 10 years following the date of the report and must also include a detailed description of the costs included in the budget estimates and the methodology used to create these estimates.⁷

The National Defense Authorization Act for Fiscal Year 2013 included a provision that we review each joint report for accuracy and completeness with respect to the budget estimates and the methodologies that were used to develop the estimates.⁸ We reported on the July 2013 joint report in June 2014.⁹ We found that DOD's and DOE's 10-year estimates in the July 2013 joint report for sustaining and modernizing U.S. nuclear weapons capabilities were generally consistent with the departments' funding plans through fiscal year 2018. However, we identified shortcomings in the joint report—specifically that the budget estimates were not complete and the report was not fully transparent about the assumptions and limitations that underlie the 10-year estimates. For instance, DOD did not include budget estimates for Air Force efforts to modernize intercontinental ballistic missiles or develop a new bomber, nor did it document key methodological assumptions and potential limitations in developing the estimates for the NC3 system. We recommended that, to improve the completeness and transparency of subsequent joint

⁵See Pub. L. No. 112-81, § 1043(a) (2011), *amended by* National Defense Authorization Act for Fiscal Year 2013, Pub. L. No. 112-239, § 1041 (2013) *and* National Defense Authorization Act for Fiscal Year 2014, Pub. L. No. 113-66, § 1054 (2013). The report is to be transmitted to the congressional defense committees, the Senate Committee on Foreign Relations, and the House Committee on Foreign Affairs. § 1043(a)(1). The President has delegated this reporting function to the Secretary of Defense and Secretary of Energy. See 77 Fed. Reg. 12,721 (Mar. 2, 2012).

⁶DOD, *Fiscal Year 2015 Report on the Plan for the Nuclear Weapons Stockpile, Nuclear Weapons Complex, Nuclear Weapons Delivery Systems, and Nuclear Weapons Command and Control System Specified in Section 1043 of the National Defense Authorization Act for Fiscal Year 2012* (Washington, D.C.: May 7, 2014).

⁷See § 1043(a)(2).(3).

⁸See Pub. L. No. 112-239, § 1041(a)(2) (adding § 1043(c)).

⁹GAO, *Nuclear Weapons: Ten-Year Budget Estimates for Modernization Omit Key Efforts, and Assumptions and Limitations Are Not Fully Transparent*, GAO-14-373 (Washington, D.C.: June 10, 2014).

reports, DOD (1) include at least a range of potential 10-year budget estimates for projects and programs, based on preliminary cost information and (2) document assumptions and limitations affecting estimates for the NC3 system. DOD agreed with our recommendations and said it would address both recommendations in future joint reports. The status of these recommendations is discussed later in this report.

The joint report DOD and DOE submitted to Congress on May 7, 2014, identified approximately \$298 billion in estimated budget requirements from fiscal years 2015 through 2024.¹⁰ We refer to this report as the May 2014 joint report. This report assesses the extent to which the 2014 joint report provides (1) budget estimates for nuclear weapons sustainment and modernization that are consistent with DOD's and DOE's internal funding plans and nuclear modernization plans and (2) complete and transparent information on the methodology used to develop these budget estimates.¹¹

We performed our work at the Offices of the Secretary of Defense, the Secretary of the Air Force, the Secretary of the Navy, and the DOD Chief Information Officer (DOD CIO), and at NNSA. To address our objectives, we followed a methodology similar to the one we used during our review of the July 2013 joint report. Specifically, we examined the departments' plans and budget estimates for sustaining and modernizing the nuclear deterrent in three areas: (1) DOD nuclear delivery systems, (2) the DOD NC3 system, and (3) the DOE nuclear security enterprise. We applied the following approach:

First, to determine the extent to which the budget estimates in the May 2014 joint report are consistent (accurate and complete) with DOD's and DOE's internal and long-term nuclear modernization plans, we obtained and analyzed the plans and budget estimates from the May 2014 report and compared them with each department's funding plans, including DOD's Future Years Defense Program (FYDP) and DOE's Future Years Nuclear Security Program (FYNSP). We compared DOD's and DOE's estimates in the joint report with the FYDP and the FYNSP, because

¹⁰DOD and DOE submitted the most recent joint report to Congress on April 2, 2015. However, this review is focused on the May 2014 joint report.

¹¹We provided a briefing on our preliminary findings to relevant committees on November 3, 2014.

these are used by the two departments to formulate projected budget requests for the current year and at least 4 subsequent years. In this report, we refer to the FYNSP and FYDP as “internal funding plans.” Because DOD has not prepared formal funding plans that it will use to formulate projected defense budget requests beyond fiscal year 2019, and the May 2014 report includes budget estimates through fiscal year 2024, we reviewed Air Force and Navy plans as well as Defense Information Systems Agency (DISA) plans, which informed the DOD CIO’s NC3 estimates; we also discussed DOD’s long-term budget estimates in the joint report with relevant DOD officials. We determined the budget estimates in the May 2014 joint report to be sufficiently accurate and complete if they were consistent with the departments’ funding plans, including the FYDP and FYNSP. To assess budget requests beyond fiscal year 2019 for DOE, we evaluated DOE’s *Stockpile Stewardship and Management Plan*, which is updated annually and includes DOE’s budget estimates for nuclear weapons sustainment and modernization for the next 25 years.

Second, to assess the extent to which the May 2014 joint report included complete and transparent information about the methodology used to develop DOD and DOE’s budget estimates for nuclear sustainment and modernization, we drew on work we performed for our review of the July 2013 joint report.¹² We identified changes in 5- and 10-year estimates from the July 2013 joint report. Additionally, we discussed with relevant officials whether the guidance and methodologies DOD and DOE used to prepare their 10-year estimates for the May 2014 joint report were the same as those they had used to prepare their estimates for the July 2013 report. In instances where different methodologies were used, we discussed the reasons why with cognizant officials. We derived general principles for developing and preparing long-term funding plans by reviewing key federal and departmental guidance, standards, and practices for cost estimating, budget preparation, financial planning, and

¹²GAO-14-373.

public reporting.¹³ We then applied these derived principles as criteria for evaluating the information in the May 2014 report. To the extent that we determined there were differences between the principles we derived and information that was provided in the May 2014 report, we discussed the causes and potential effects of these differences with relevant DOD and DOE officials.

We conducted this performance audit from July 2014 to July 2015 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives. Appendix I provides more details on our scope and methodology.

Background

The 2010 *Nuclear Posture Review Report* outlined the administration's approach to maintaining the U.S. nuclear deterrent capability while showing its intent to make new investments in developing strategic delivery systems, upgrade the NC3 system, and modernize NNSA's government-owned, contractor-operated nuclear security enterprise.¹⁴ It identified long-term modernization goals and plans—including sustaining a safe, secure, and effective nuclear arsenal by extending the lives of existing nuclear weapons; increasing investments to rebuild and

¹³Such federal guidance included the following: Executive Office of the President, Office of Management and Budget, *Preparation, Submission, and Execution of the Budget*, Circular No. A-11 (Washington, D.C.: July 2013); V 3.0 *Capital Programming Guide: Supplement to Circular No. A-11: Planning, Budgeting, and Acquisition of Capital Assets* (Washington, D.C.: July 2013); and *Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information Disseminated by Federal Agencies*, accessed August 14, 2013, http://www.whitehouse.gov/omb/fedreg_final_information_quality_guidelines; and GAO, *GAO Cost Estimating and Assessment Guide: Best Practices for Developing and Managing Capital Program Costs*, GAO-09-3SP (Washington, D.C.: Mar. 2, 2009).

¹⁴Section 1070 of the National Defense Authorization Act for Fiscal Year 2008, Pub. L. No.110-181 (2008), required the Secretary of Defense, in consultation with the Secretary of Energy and Secretary of State, to conduct a comprehensive review of the nuclear posture of the United States for the next 5 to 10 years. DOD published the conclusions and recommendations from that review in the April 2010 *Nuclear Posture Review Report*. Department of Defense, *Nuclear Posture Review Report* (Washington, D.C.: Apr. 6, 2010).

modernize the nation's nuclear infrastructure; and strengthening the science, technology, and engineering base.¹⁵

Section 1043 of the National Defense Authorization Act for Fiscal Year 2012, as amended, requires that the annual joint report include 10-year budget estimates related to sustaining and modernizing U.S. nuclear weapons capabilities, among several other elements.¹⁶ The other required elements include detailed descriptions of DOD's and DOE's plans to

- enhance the safety, security, and reliability of the U.S. nuclear weapons stockpile;
- sustain and modernize the nuclear weapons complex;
- maintain, modernize, and replace delivery systems for nuclear weapons;
- sustain and modernize the nuclear weapons command and control system; and
- retire, dismantle, or eliminate any nuclear weapons, delivery systems, or silos/submarines that carry such weapons or delivery systems.¹⁷

Section 1043 was recently amended again to require the Congressional Budget Office (CBO) to submit to the congressional defense committees a related report for odd-numbered fiscal years, to include estimates of certain costs for nuclear weapons and delivery systems.¹⁸ The CBO report is to include an estimate of costs during a 10-year period

¹⁵Ibid.

¹⁶See Pub. L. No. 112-81, § 1043(a)(2) (as amended). Specifically, section 1043 requires the joint report to include a detailed estimate of the budget requirements associated with sustaining and modernizing the U.S. nuclear deterrent and nuclear weapons stockpile, including the costs associated with various plans, over the 10-year period following the date of the report. § 1043(a)(2)(F). The budget requirements are to include applicable and appropriate costs associated with DOD's procurement, military construction, operation and maintenance, and research, development, test, and evaluation accounts. *Id.* The joint report is also to include a detailed description of costs included in the budget estimates and the methodology used to create the estimates. § 1043(a)(3).

¹⁷§ 1043(a)(2). The report must also include a detailed description of the steps taken to implement the plan submitted in the previous year, including difficulties encountered in implementation. § 1043(a)(2)(G).

¹⁸See Carl Levin and Howard P. "Buck" McKeon National Defense Authorization Act for Fiscal Year 2015, Pub. L. No. 113-291, § 1643 (2014) (amending § 1043(b)). If the joint report submitted for an even-numbered fiscal year contains a significant change affecting the estimates the CBO included in the prior year's report, the CBO must submit a letter describing the changes. See § 1043(b)(2) (as amended).

associated with fielding and maintaining the current U.S. nuclear weapons and nuclear weapon delivery systems; an estimate of the costs during a 10-year period of any anticipated life extension, modernization, or replacement of those nuclear weapons and delivery systems; and an estimate of the relative percentage of total defense spending represented by these costs during that period. CBO's recent estimate of costs for the fiscal year 2015 through 2024 time frame is \$348 billion.¹⁹

The FYDP is DOD's 5-year funding plan; it is updated annually and provides DOD's current budget request and budget estimates for at least 4 subsequent fiscal years. The FYDP includes thousands of discrete program elements, each of which may include funding projections for DOD appropriations accounts—including operation and maintenance; research, development, test, and evaluation; and procurement. DOD's Director of Cost Assessment and Program Evaluation maintains the FYDP and works with the Office of the Under Secretary of Defense (Comptroller) to ensure that the data presented in annual budget-justification materials match the FYDP at the appropriation account level.

The FYNSP is NNSA's 5-year funding plan. NNSA is required to submit the FYNSP to Congress at or about the same time as the President's budget,²⁰ and it is typically included as part of NNSA's annual budget-justification documents.²¹ NNSA's Management and Budget Office and Office of Program Review and Analysis developed the FYNSP for fiscal years 2015 through 2019 by incorporating inputs from relevant program offices including: the Office of Safety, Infrastructure, and Operations; the Office of the Chief Information Officer; and the Office of Defense Nuclear Security. NNSA also describes its modernization plans and budget estimates in its *Stockpile Stewardship and Management Plan*—the more detailed planning document on which DOE's portion of the May 2014 joint

¹⁹CBO submitted its latest report on projected costs of U.S. nuclear forces on January 22, 2015. See CBO, *Projected Costs of U.S. Nuclear Forces, 2015 to 2024* (Washington, D.C.: January 22, 2015).

²⁰Pub. L. No. 106-65, § 3253 (1999) (codified as amended at 50 U.S.C. § 2453).

²¹NNSA refers to the cost figures included in its budget materials during the FYNSP period as "budget requirements" and those after the FYNSP as "estimated budget requirements." We refer to these figures as "budget estimates" throughout this report.

report is based—and provides information on modernization and operations plans and budget estimates over the next 25 years.²²

The Joint Report's Budget Estimates Are Generally Consistent with Both Departments' Internal Funding Plans and Long-Term Nuclear Modernization Plans, with a Few Exceptions

The Joint Report Includes Budget Estimates from Both DOD and DOE

In the May 2014 joint report, DOD and DOE provide estimates associated with sustaining and modernizing the nuclear deterrent and nuclear stockpile, including associated costs over the 10-year period following the date of the report. DOD's and DOE's 10-year estimates for sustaining and modernizing U.S. nuclear weapons capabilities—including nuclear delivery systems, the NC3 system, the nuclear stockpile, and the nuclear security enterprise—total \$298.1 billion through fiscal year 2024.²³ DOD's estimates for nuclear delivery systems are generally consistent with internal funding plans, although it is unclear whether its NC3 system estimates are consistent with the FYDP. DOE's estimate for sustaining and modernizing the nuclear stockpile and nuclear security enterprise is generally consistent with the FYNSP and the estimates described in its *Fiscal Year 2015 Stockpile Stewardship and Management Plan*, but estimates for two key efforts do not align with plans.

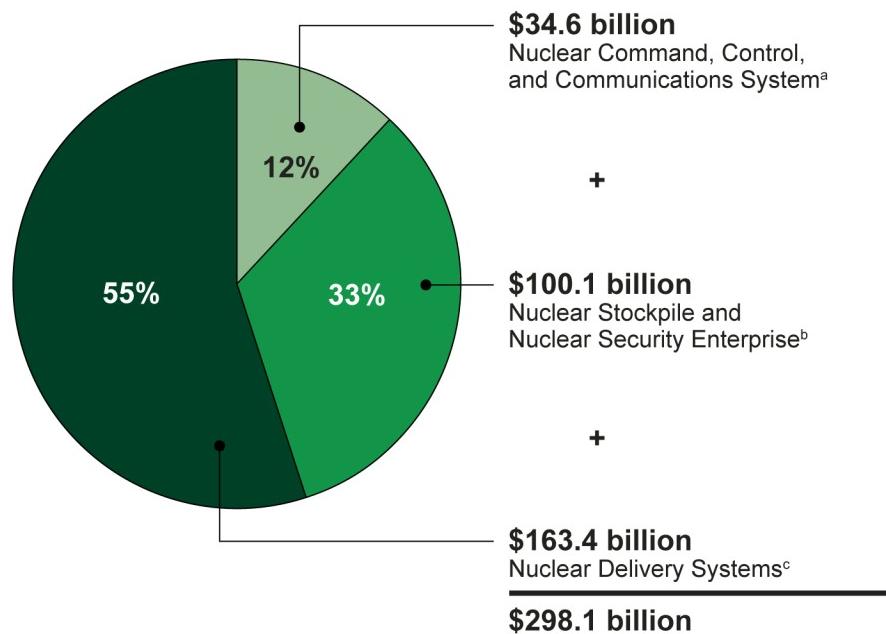
DOD and DOE each contributed budget estimates for sustaining and modernizing their respective areas of the nuclear enterprise. The total 10-year sustainment and modernization estimate of \$298.1 billion in the May 2014 joint report consists of estimates for nuclear delivery systems and the NC3 system, which were provided by DOD, and an estimate for the nuclear stockpile and security enterprise, which was provided by DOE. DOD's portion of the estimate is approximately \$198 billion, or about 66 percent of the total, while DOE's portion is approximately \$100.1 billion, or about 34 percent of the total. Figure 1 shows the total 10-year sustainment and modernization estimates for the nuclear delivery

²²The *Stockpile Stewardship and Management Plan* is NNSA's formal means for communicating to Congress the status of certain activities and its long-range plans and budget estimates for sustaining the stockpile and modernizing the nuclear security enterprise. The Ike Skelton National Defense Authorization Act for Fiscal Year 2011 mandated that GAO study and report annually on whether NNSA's nuclear security budget materials provide for funding that is sufficient to modernize and refurbish the nuclear security enterprise. Pub. L. No. 111-383, § 3113 (2011), as amended by Pub. L. No. 112-239, § 3132(a)(2) (codified as amended at 50 U.S.C. § 2455).

²³In the May 2014 joint report, DOE inadvertently omitted budget estimates in fiscal years 2020 through 2024 for two key planned activities, totaling \$1.6 billion. The budget estimate of \$298.1 billion reflects corrected data that DOE provided us.

systems, the NC3 system, and the nuclear stockpile and nuclear security enterprise.

Figure 1: Departments of Defense (DOD) and Energy (DOE) 10-Year Estimates for Sustaining and Modernizing the U.S. Nuclear Deterrent as of May 2014



Source: GAO analysis of Department of Defense (DOD) and Department of Energy (DOE) data. | GAO-15-536

^aDOD provides budget estimates for the nuclear command, control, and communications (NC3) system, which consists of satellites, early warning radars, aircraft, communications networks, and other systems.

^bDOE provides budget estimates for the nuclear weapons stockpile, which currently consists of seven weapon types and the nuclear security enterprise, which consists of eight geographically dispersed government-owned, contractor-operated sites, such as laboratories and test sites.

^cDOD provides budget estimates for nuclear delivery systems, which consist of a variety of platforms such as heavy bombers, air-launched cruise missiles, and ballistic-missile submarines.

DOD's Estimates for Nuclear Delivery Systems Are Generally Consistent with Its Internal Funding Plans, but It Is Unclear Whether the NC3 Estimates Are Consistent

In the May 2014 joint report, DOD provided budget estimates associated with sustaining and modernizing nuclear delivery systems—such as the Minuteman III, heavy bombers, and the Ohio-class submarine—and for the NC3 system. DOD's \$163.4 billion sustainment and modernization estimate for nuclear delivery systems is comprised of estimates developed by the Air Force and the Navy for the individual systems. We found that the Air Force and Navy estimates in the joint report are generally consistent with DOD's FYDP for specific accounts, such as procurement; research, development, test, and evaluation; operation and

maintenance; and military personnel accounts through fiscal year 2019. Air Force and Navy estimates for 2015 through 2019 include

- \$14.6 billion in procurement and ship construction²⁴
 - Air Force: \$2.5 billion
 - Navy: \$12.1 billion
- \$21.7 billion in research, development, test, and evaluation
 - Air Force: \$15.5 billion
 - Navy: \$6.2 billion
- \$29.5 billion in operation and maintenance and military personnel
 - Air Force: \$16.7 billion
 - Navy: \$12.8 billion

DOD provides its plans for sustaining and modernizing nuclear delivery systems in a variety of documents, including the joint report, budget justification materials, and other planning documents. These plans include maintaining current systems while developing new ones. For example:

- Heavy Bombers. The Air Force plans to maintain its long-range attack capabilities through a combination of sustainment and modernization of its bombers. The Air Force plans to acquire a new bomber in the mid-2020s, which it expects to perform conventional missions and nuclear deterrence. At the same time, it plans to modernize the B-2 and B-52 bombers to enable them to retain long-range strike capabilities through the 2030s. The B-52—a 50-plus years old aircraft—has an expected service life through at least 2040, and the Air Force plans to improve and update its avionics, among other things. The Air Force also plans to make investments in avionics, communications, and weapons upgrades, among other things, for the B-2, which has an expected service life through 2058.
- Cruise Missiles. The Air Force plans to sustain the air-launched cruise missile through 2030, in part by developing a service life extension program, because some of the missile's components are expected to become non-supportable prior to 2030. The Air Force is updating the missile's software and associated test procedures and test equipment, among other things. The Air Force has stated that the future need for a deterrent capability makes development of the long-range standoff missile essential to modernization. In fiscal year 2015, DOD delayed

²⁴This estimate does not include approximately \$0.8 billion in NNSA funding for nuclear reactor design for the Navy's *Ohio*-replacement submarine.

the long-range standoff missile program for three years, due to higher department priorities.²⁵

- Fleet Ballistic Missile Submarines (SSBN). The Navy plans to retire all 14 Ohio-class submarines and replace them with 12 new submarines; the first new submarine is to be procured in fiscal year 2021. In the meantime, the Navy is performing intermediate maintenance and industrial support for the incremental overhaul, repair, and refueling of the Ohio-class submarines, among other things. The Navy plans for the Trident II submarine-launched ballistic missile to be in service through at least 2042; during this period it plans to redesign and replace missile guidance and electronic systems, among other things.

DOD's 5-year and 10-year budget estimates for sustaining and modernizing nuclear delivery systems are summarized in table 1.

Table 1: Department of Defense's (DOD) 5-Year and 10-Year Nuclear Delivery System Sustainment and Modernization Budget Estimates as of May 2014

Delivery system	Then-year Dollars in Billions ^a		
	Fiscal years 2015-2019	Fiscal years 2020-2024	Total
Heavy bombers			
B-2 and B-52	13.3	11.1	24.4
New bomber ^b	11.4	21.7	33.1
B61-12 tail kit assembly	1.2	0.1	1.3
Cruise missiles			
Air-launched cruise missile	0.3	0.3	0.6
Long-range standoff missile	0.2	2.6	2.8
Intercontinental ballistic missile (ICBM)			
Minuteman III	6.7	4.9	11.6
Minuteman III replacement ^c	-	6.0	6.0
ICBM fuze modernization	0.7	0.7	1.4
Dual-capable aircraft^d			
Fleet ballistic missile submarine (SSBN)			
Ohio-class submarine	9.4	9.6	19.0
Ohio-replacement submarine	10	25.2	35.2

²⁵DOD officials noted that due to aging concerns with the air-launched cruise missile, DOD plans to accelerate the long-range standoff missile program by two years in the fiscal year 2016 budget submission.

Delivery system	Then-year Dollars in Billions ^a		
	Fiscal years 2015-2019	Fiscal years 2020-2024	Total
SSBN-X reactor design (NNSA)	0.8	0.3	1.1
Submarine-launched ballistic missile (SLBM) (Trident II)	11.6	12.6	24.2
Total^e	66.8	96.6	163.4

Source: GAO analysis of DOD data. | GAO-15-536

Note: Data are from the May 7, 2014 joint report.

^aEstimated amounts include military personnel; operation and maintenance; research, development, test, and evaluation; and procurement and ship construction. DOD activities do not include overhead costs such as personnel assigned to higher headquarters who work on nuclear deterrence-related issues.

^bThe new bomber is expected to perform both conventional and nuclear deterrent missions.

^cDOD is performing an analysis of alternatives on the Minuteman III replacement and planning for its acquisition. It did not provide a 5-year estimate. DOD provided a 10-year estimate in the joint report and stated that this is a rough estimate based on analysis of alternative activities.

^dDual-capable aircraft are fighter aircraft capable of delivering nuclear weapons. These figures include operation and maintenance funding for the F-16C and F-15E squadrons based overseas and nuclear weapons storage as well as F-35 dual-capable aircraft research, development, test, and evaluation funds. The 10-year projections were computed using inflation rates of 1.8 percent for the military personnel appropriations account and 2 percent for other appropriation accounts.

^eAmounts shown may include nuclear command and control system integration costs, which are also included in NC3 amounts.

The May 2014 joint report shows that the 5-year estimate for the NC3 system for fiscal years 2015 through 2019 totals \$17.9 billion and the 10-year estimate for fiscal years 2015 through 2024 totals \$34.6 billion. The DOD CIO prepared the plans and budget estimates for the NC3 system. The 2015 through 2019 estimates include

- \$2.1 billion in research, development, test, and evaluation;
- \$6 billion in procurement; and
- \$9.8 billion in operation and maintenance.

However, it is unclear whether these estimates for the NC3 system are consistent with DOD's internal funding plans. We were able to verify some of the calculations used to develop the estimates, but we were not able to compare the estimates with the FYDP, because the CIO did not always link projects and activities with specific FYDP programs. Further, the CIO did not clearly document all the assumptions used in developing the estimates or the limitations associated with the data from which the estimates were derived. When we reviewed the 2013 joint report, we recommended that for future joint reports the Secretary of Defense direct the CIO to document in the report the methodological assumptions and limitations affecting the report's estimates for sustaining and modernizing

the NC3 system.²⁶ DOD agreed with our recommendation and stated that it would include all key assumptions and potential limitations utilized in NC3 system estimates in future joint reports, but the May 2014 joint report does not include this information. Therefore, our recommendation has not yet been implemented. Because the May 2014 joint report does not provide clear documentation of the methodological assumptions and limitations, it was not always possible for us to determine how a given estimate was developed. We discuss the limitations of the CIO's methodology for developing the estimates later in this report.

DOE's Estimates for Modernizing the Nuclear Security Enterprise Are Generally Consistent with Its Internal Funding Plans, but Estimates for Two Key Efforts Do Not Align with Plans

In the May 2014 joint report, DOE provided budget estimates associated with sustaining and modernizing the nuclear stockpile and nuclear security enterprise. NNSA developed the \$100.1 billion estimate, which is generally consistent with the funding plans described in DOE's FYNSP and *Stockpile Stewardship and Management Plan*.²⁷ However, estimates for two key modernization efforts do not align with these funding plans.²⁸ We found that the 5-year FYNSP budget estimates for the cruise missile warhead life extension program are lower than the amount that NNSA's internally developed estimate indicates is needed to meet the program's schedule. In addition, we found that the 5-year FYNSP budget estimates

²⁶GAO-14-373.

²⁷NNSA is a separately organized agency within DOE that is responsible for the management and security of DOE's nuclear weapons, nuclear nonproliferation, and naval reactor programs.

²⁸We have ongoing work examining these modernization efforts in more detail as part of our annual review on whether NNSA's nuclear security budget materials provide for funding sufficient to modernize and refurbish the nuclear security enterprise as well as recapitalize its infrastructure. Specifically, we are (1) identifying the extent to which budget estimates for modernizing the nuclear security enterprise changed between the 2015 budget materials and the prior year's materials, (2) assessing the extent to which NNSA's budget estimates for its current major modernization efforts align with plans for those efforts, and (3) assessing the extent to which NNSA's 2015 budget estimates for modernizing the nuclear security enterprise address the agency's stated goal of stopping the growth of the deferred maintenance backlog. As we finalize work in this area, we will consider making recommendations, as appropriate, and expect to issue a final report by August 2015.

for maintenance and recapitalization of NNSA's infrastructure do not meet DOE investment benchmarks.²⁹

DOE's 5-year and 10-year budget estimates for sustaining and modernizing the nuclear stockpile and nuclear security enterprise are summarized in table 2.

Table 2: Department of Energy's (DOE) 5-Year and 10-Year Nuclear Modernization Budget Estimates as of May 2014

Then-year Dollars in Billions	Fiscal years 2015-2019	Fiscal years 2020-2024	Total
Stockpile area	15.3	18.6	33.9
Science, technology, and engineering capabilities area	9.6	10.5	20.1
Infrastructure area	12.7	17.1	29.8
All other weapons activities	8.1	8.3	16.3
Total	45.7	54.5	100.1

Source: GAO Analysis of DOE data. | GAO-15-536

Totals may not add due to rounding.

Note: In the May 2014 joint report, DOE inadvertently omitted certain funds, totaling \$1.6 billion. The budget estimates above reflect corrected data.

A significant portion of NNSA's budget estimates are for operating programs where budget estimates reflect a generally consistent level of effort from one year to the next.³⁰ For example, the May 2014 joint report

²⁹For the purposes of this report, when we discuss DOE's infrastructure investment benchmarks, we are specifically referring to those for (1) maintenance and repair and (2) recapitalization. According to the DOE 2005 *Real Property Asset Management Plan*, these benchmarks—which are based on findings from the National Research Council and National Academies of Science—are to help ensure that the department's facilities remain in good working order (i.e., maintenance) and remain modern and relevant to address changing missions through alterations and improvements (i.e., recapitalization).

³⁰For the FYNSP (i.e., fiscal years 2015 through 2019), budget estimates for all NNSA programs are developed as part of NNSA's planning and programming process. For the 5 years after the FYNSP (i.e. fiscal years 2020 through 2024), budget estimates for most programs are based on the estimates contained in 2019 (the last year of the FYNSP) and then increased each subsequent year by a percentage inflation rate, which, according to NNSA officials, was calculated based on numbers provided by the Office of Management and Budget. The methodology identifies as an assumption that these programs will continue at the same levels of effort from 2020 through 2024 as during the last year of the FYNSP.

contained budget estimates of \$20.1 billion (20 percent of the total DOE estimates) for science, technology, and engineering capabilities, with an average annual percentage increase of 2.0 percent from 2015 to 2024. Similarly, the May 2014 joint report contained budget estimates of \$16.3 billion (16 percent of the total DOE estimates) for other weapons activities, with an average annual percentage increase of 2.5 percent.

In contrast, NNSA does develop specific cost estimates for use in developing annual budget estimates for each life extension program and major weapon alteration.³¹ Life extension programs and alterations, included in the stockpile area, have a distinct beginning design phase and a distinct end once production is completed. We found the budget estimates for two of the life extension and alteration programs to be consistent with NNSA's internal cost estimates, but the estimate for a third life extension program is not.³² NNSA's 5-year budget estimates for the B61 bomb life extension program and the W88 warhead alteration—both of which are currently in the development phase and scheduled for first production units in fiscal year 2020—are generally consistent with NNSA's internal cost estimates. For 2015 through 2019, NNSA plans to request approximately \$672 million annually for the B61 and about \$160 million annually for the W88 alteration. In general, these annual budget estimates reflect the midpoints of the programs' internally estimated cost ranges, and, according to NNSA officials, are consistent with the program's established cost baseline.

However, the estimates for the FYNSP for the cruise missile warhead life extension program, which is currently in its design phase and scheduled for a first production unit in the mid-2020s, are not aligned with plans. In each year of the FYNSP, budget estimates for the cruise missile life extension program are below the low point of the cost range developed internally for the program and included in NNSA's *Stockpile Stewardship*

³¹Life extension programs extend, through refurbishment, the operational lives of weapons in the nuclear stockpile by 20 to 30 years and certify these weapons' military performance requirements without underground nuclear testing. Much like a nuclear weapon life extension program, a weapon alteration refurbishes components to ensure the weapon can continue to meet military requirements. However, an alteration generally refurbishes fewer components than a life extension program.

³²We did not review the budget estimates associated with the W76-1 life extension program because this program is currently in full scale production and production is planned to be completed in fiscal year 2019.

and Management Plan. Specifically, the May 2014 joint report contains 5-year budget estimates for the cruise missile life extension program totaling approximately \$475 million, which is about \$225 million less than the \$700 million that is needed to support the low point of the program's internally estimated cost range. According to NNSA officials, the shortfall in the 5-year budget estimates reflects a trade-off between unconstrained funding based on planning requirements and budget constraints imposed by competing priorities. NNSA officials said that the total budget estimates are sufficient to cover the near-term shortfall, as post-FYNSP budget estimates are at the high end of the program's cost range. In addition, agency officials said that the cruise missile warhead life extension program does not have an established cost baseline. According to NNSA, the agency expects to start the required design and cost studies needed to establish a cost baseline in fiscal year 2017. Neither the 2015 budget justification, the *Stockpile Stewardship and Management Plan*, nor the May 2014 joint report explicitly state that the budget estimates for the cruise missile life extension program are not consistent with the total amount needed to fund the program within the range of its cost estimate for 2015 through 2019.

In addition, NNSA's budget estimates to address its current \$3.6 billion deferred maintenance backlog—maintenance that was not performed when it should have been or was scheduled to be done and is delayed—do not meet DOE infrastructure investment benchmarks. NNSA has reported that of the nuclear security enterprise's 3,800 facilities, 50 percent are over 40 years old and 12 percent are no longer being used because of their age and poor condition. In its 2015 congressional budget justification, NNSA indicated that one of its goals was to stop the growth of its deferred maintenance backlog. In general, deferred maintenance is either prevented by conducting scheduled maintenance³³ or addressed by completing recapitalization activities.³⁴ We found that NNSA's near-term budget estimates for 2015 fall below DOE's infrastructure investment

³³Maintenance and repair activities—including the replacement of parts, systems, or components—preserve or maintain a facility in an acceptable condition to safely conduct programmatic operations. Maintenance and repair exclude activities directed towards expanding the capacity of an asset or otherwise upgrading it to serve needs different from, or significantly greater than, its current use.

³⁴Recapitalization addresses deferred maintenance by performing alterations and betterments to keep existing facilities modern and relevant in an environment of changing standards and missions.

benchmarks by nearly \$2 billion over the next 5 years, and in its fiscal year 2015 budget materials NNSA stated its deferred maintenance backlog was expected to grow to \$4 billion by 2019.³⁵ Continuing to fall short of these benchmarks could result in further increases to NNSA's deferred maintenance backlog rather than stopping its growth. Agency officials said that deferred maintenance is not the only input the agency considers when planning investment decisions but did acknowledge that prioritizing maintenance and recapitalization investment in the budget process is a challenge. These officials described steps NNSA is taking to improve data for decision making for infrastructure resource prioritization, such as developing new statistical models for predicting maintenance and recapitalization needs.

³⁵According to NNSA, the Secretary of Energy provided guidance requiring that fiscal year 2016 budget requests provide sufficient funding to avoid any increase in deferred maintenance beyond fiscal year 2015 levels.

The May 2014 Joint Report Contains More Complete Information than the July 2013 Joint Report, but Opportunities Exist to Further Improve Transparency

The May 2014 joint report contains information that was not included in the July 2013 joint report, and this information improves the completeness of some budget estimates, but opportunities exist to further enhance transparency. For example, DOD and DOE, in response to our prior recommendations, included budget estimates for delivery systems and construction projects in the 2014 report that they had not included in the 2013 report.³⁶ However, additional information could provide further benefit to decision makers. For example, DOD did not describe in detail the methodology it used to develop the estimates in the May 2014 report. Additionally, DOE did not identify the misalignment between estimates and plans for either the cruise missile life extension program or the deferred maintenance backlog. Furthermore, DOD and DOE did not explain why some estimates in the May 2014 report had been modified from the estimates in the 2013 report.

³⁶In December 2013, we recommended that to improve the utility of future budget estimates and address the misalignment between modernization plans and budget estimates, the Administrator of NNSA should include in future modernization plans at least a range of potential budget estimates for projects and programs that the agency knows are needed, based on available information about these projects and programs' future costs. NNSA's Associate Administrator for Management and Budget generally concurred with the recommendation. See [GAO-14-45](#).

In June 2014, we made two recommendations to the Secretary of Defense to improve subsequent joint reports to Congress: (1) To ensure the accuracy and completeness of DOD's estimates for sustaining and modernizing strategic delivery systems over the 10-year period covered in subsequent joint reports, we recommended the Secretary of Defense direct the Secretary of the Air Force and Secretary of the Navy, as appropriate, to include at least a range of potential budget estimates for projects and programs in future modernization plans that extend beyond the period covered by their 5-year internal funding plans, based on preliminary cost information, and (2) To improve the transparency of the joint report's methodologies, thereby assisting Congress in understanding the basis for DOD's NC3 estimates in subsequent joint reports, we recommended the Secretary of Defense direct the DOD CIO to document in the report the methodological assumptions and limitations affecting the report's estimates for sustaining and modernizing the NC3 system. DOD agreed with both recommendations. See [GAO-14-373](#).

DOD Included Additional Information in the May 2014 Report but Did Not Describe in Detail the Methodologies It Used to Develop Its Budget Estimates

DOD included additional information in the May 2014 joint report regarding its estimates for sustaining and modernizing nuclear delivery systems. In our review of the July 2013 report, we recommended that DOD include at least a range of potential budget estimates for future modernization plans that extend beyond the period covered by the 5-year FYDP; we also recommended that DOD better document its assumptions and the limitations of the methodology it used in developing the estimates for the NC3 system. In response to our recommendations, DOD included in the 2014 report 10-year budget estimates for replacing the Minuteman III missile and for developing and producing the new long-range bomber, which had not been provided in the 2013 report. Additionally, DOD noted in the 2014 report that it had used a common inflation factor in preparing some of the budget estimates for the fiscal years that follow the FYDP (fiscal years 2020 through 2024). DOD also improved the transparency of the joint report by stating that duplication may exist between the estimates for the nuclear delivery systems and the NC3 system.

However, DOD's methodology for preparing its \$34.6 billion estimate for sustaining and modernizing the NC3 system through fiscal year 2024 is not fully transparent in the May 2014 report, because some of the assumptions and potential limitations are not documented in the report. As in the July 2013 joint report, the DOD CIO prepared the plans and the 10-year budget estimates for sustaining and modernizing the NC3 system.³⁷ In June 2014, we reported that the CIO had used DISA's October 2011 Nuclear Command, Control, and Communications (C3) System Program Tracking Report³⁸ as an authoritative source to begin identifying relevant programs in the FYDP and determining how much funding from these programs should be allocated to the NC3 mission.³⁹ We found at that time that the use of the 2011 DISA report led to a key methodological limitation, because that report did not link all projects and activities with specific FYDP programs. For example, the DISA report did not link any operation and maintenance activities with FYDP programs, and it linked 72 percent of the procurement activities directly with FYDP

³⁷The NC3 system consists of satellites, early warning radars, aircraft, communications networks, and other systems that are managed by the Air Force, Navy, DISA, and other organizations. Many systems that make up the NC3 system also support nonnuclear military operations.

³⁸DISA, *Nuclear C3 System Program Tracking Report* (Washington, D.C.: Oct. 2011).

³⁹GAO-14-373.

programs; as a result, the CIO did not have a direct way to prepare budget estimates for these projects and activities. DOD did not disclose this limitation in the July 2013 report. The CIO made certain assumptions to overcome the limitation, thereby covering affected NC3 activities in its 10-year estimate. However, DOD did not document the assumptions that had been made in developing the estimates. We recommended that the Secretary of Defense direct the CIO to document in future joint reports the methodological assumptions and limitations affecting the estimates.⁴⁰ DOD agreed with this recommendation and stated that it would include all key assumptions and potential limitations used in developing NC3 system estimates in future joint reports.

CIO officials told us that for consistency within the department and for external consumers of funding information, they continued to use the same methodology in preparing the May 2014 report that they had used for the July 2013 report. These officials added that while their methodology remained the same in that they continued to use the 2011 DISA report to identify relevant activities from which to allocate funding to the NC3 system, they used fiscal year 2015 FYDP data to develop the estimates. However, DOD did not include a description in the report of the methodology the CIO used to develop the NC3 budget estimates. In addition, as in the July 2013 report, it did not document the DISA report's limitation and the potential effect of that limitation on the estimate. The usefulness and transparency of the joint report could be further improved if DOD implemented our previous recommendation to document the methodological assumptions and limitations affecting the NC3 system estimate. Therefore, we continue to believe that this recommendation has merit and should be addressed.

Furthermore, the May 2014 report does not provide a detailed description of the methodologies the Air Force and Navy used to create the budget estimates. The Air Force and Navy used different methodologies to develop their estimates for sustaining and modernizing nuclear delivery systems for the years beyond the FYDP (fiscal years 2020 through 2024). Additionally, the Air Force changed the methodology it had previously used to develop budget estimates for the joint report. However, the May 2014 report does not provide explicit information on the Air Force's or the Navy's budget estimate methodologies, document the differences in the

⁴⁰Ibid.

methodologies used to create the budget estimates, or explain the change in how the Air Force's estimates were developed for the five years after the FYDP.

To calculate the estimates for years following the end of the 5-year FYDP, the Navy used data from fiscal year 2019—the last year of the FYDP—in developing the May 2014 report and applied DOD's common inflation factor of 1.8 percent for pay and 2 percent for non-pay costs for each of its delivery system estimates except for the Ohio-replacement submarine. Navy officials told us they used the overall life-cycle estimate for the submarine, because it accounts for the development and purchase of the system. These officials added that inflation of FYDP estimates for the submarine do not account for Navy acquisition plans in the period following the FYDP (fiscal years 2020 – 2024). Thus, the planned acquisitions are not reflected in the FYDP, and inflating FYDP estimates would under-state the amount of funding needed. Prior to the May 2014 report, the Air Force had extended FYDP amounts by applying a 1.8 percent inflation factor for each year following the last fiscal year of the FYDP through the end of the 10-year period.⁴¹ However, Air Force officials told us that for the 2014 report they changed the way they developed the budget estimates beyond the FYDP, to help improve accuracy.⁴² Air Force officials said that they used inputs from their long-range force structure and resource allocation plan, which is to balance Air Force and DOD funding needs against current budget realities in order to accommodate priorities while reducing risk, rather than apply an inflation factor to the last fiscal year of the FYDP.⁴³ These officials further explained that they had shifted away from using only inflation factors to determine future costs, because using such factors can lead to faulty assumptions. For example, if a delivery platform, system, or program is

⁴¹Air Force officials said they chose to use an inflation factor of 1.8 percent, because it was in line with common inflation factor amounts—1.8 and 2 percent—used across DOD. For the July 2013 joint report, the last year of the FYDP at that time was fiscal year 2018.

⁴²Air Force officials said they computed the 10-year budget estimate projection for the dual-capable aircraft using inflation rates of 1.8 percent for military personnel and 2 percent for other appropriation accounts due to uncertainty associated with future missions.

⁴³The Air Force's Programmed Force Extended is a planning excursion developed to support a strategic risk assessment, and according to officials it covers a 30-year period in order to support planning horizons. Air Force officials said one use for the Programmed Force Extended is to establish baseline data for annual planning activities.

underfunded now, based on current fiscal priorities and realities, future estimates will likely reflect such underfunding if estimates are developed strictly by applying inflation factors to current estimates. Representatives from DOD's Cost Assessment and Program Evaluation office and the Office of the Under Secretary of Defense (Comptroller) told us that including a description of the methodologies used to develop estimates in the report, including programmatic assumptions, would be helpful in showing how the estimates were created—especially as the estimates for the various nuclear delivery systems were developed using different methodologies.

Section 1043, as amended, requires that the joint report include a detailed description of the costs included in the budget estimates and the methodology used to create these estimates.⁴⁴ Key principles for preparing funding plans, which we have derived from several federal guidance documents, indicate that potential methodological limitations should be disclosed in order to enhance the quality of the funding plan by improving transparency.⁴⁵ These principles further indicate that including all relevant costs can help enhance accuracy and completeness. Unless explicit information on the methodologies used to develop the budget estimates is in the joint report—including any potential limitations associated with the methodologies—it may be difficult for Congress, as it assesses long-term affordability when allocating resources, to understand the basis for the estimates and be assured of the estimates' accuracy and completeness.

⁴⁴ § 1043(a)(3).

⁴⁵ Such federal guidance included the following: Executive Office of the President, Office of Management and Budget, *Preparation, Submission, and Execution of the Budget*, Circular No. A-11 (Washington, D.C.: July 2013); V 3.0 *Capital Programming Guide: Supplement to Circular No. A-11: Planning, Budgeting, and Acquisition of Capital Assets* (Washington, D.C.: July 2013); *Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information Disseminated by Federal Agencies*, accessed August 14, 2013, http://www.whitehouse.gov/omb/fedreg_final_information_quality_guidelines; and GAO, *GAO Cost Estimating and Assessment Guide: Best Practices for Developing and Managing Capital Program Costs*, [GAO-09-3SP](#) (Washington, D.C.: Mar. 2, 2009).

DOE Included Some Information on the Methodologies it Used to Develop Its Budget Estimates but Inadvertently Omitted Budget Estimates for Certain Activities

DOE included some information on the methodologies it used to develop the budget estimates it included in the May 2014 joint report; for more complete information on the methodologies it used, DOE refers readers of the joint report to its 2015 *Stockpile Stewardship and Management Plan*, the more detailed planning document on which DOE's portion of the joint report is based. DOE also included additional estimates for construction projects that it had omitted in the July 2013 report. However, DOE inadvertently omitted some budget estimates for certain activities from the May 2014 report.

The 2014 report includes high-level methodological information and brief descriptions of how budget estimates were developed for the 5-year FYNSP, the 5 years after the FYNSP, and life extension programs (regardless of time period). For example, according to the joint report:

- For the 5-year FYNSP, budget estimates for all programs and construction projects were generated as part of the NNSA planning and programming process for the 2015 President's budget request and are based on historical costs, current plans, and input from federal and contractor officials.
- For the 5 years after the FYNSP, budget estimates for all programs (other than life extension programs and construction projects) are based on the estimates contained in 2019 (the last year of the FYNSP) and then increased each subsequent year by a percentage inflation rate, which, according to NNSA officials, was calculated based on numbers provided by the Office of Management and Budget. The methodology identifies as an assumption that these programs will continue at the same levels of effort from 2020 through 2024 as during the last year of the FYNSP.
- For the 5 years after the FYNSP, budget estimates for construction projects include each project contained in NNSA's integrated priorities list, which is a list that ranks projects according to their importance for meeting mission requirements, among other factors. This integrated priorities list includes two major projects that were omitted in the prior year's joint report. This inclusion of previously omitted projects is responsive to our December 2013 recommendation to include at least preliminary estimates for all known construction projects and makes the estimates contained in the May 2014 report more complete than those in the prior year's report.⁴⁶

⁴⁶ GAO-14-45.

-
- For the entire 10-year period covered by the May 2014 joint report, budget estimates for life extension programs and alterations are based either on an established cost baseline for those programs sufficiently far enough along to have completed a cost study, or on a model that employs the historical costs for a life extension program that is currently in full scale production and that is adjusted based on complexity factors, among other things, for those programs that have not yet completed a cost study.

The May 2014 report refers readers to the *2015 Stockpile Stewardship and Management Plan*—the more detailed planning document on which DOE’s portion of the joint report is based—for more information on methodological assumptions used to develop budget estimates. For example, the *2015 Stockpile Stewardship and Management Plan* states that budget estimates for life extension programs are generally provided at the mid-point of a high-low range and provides charts detailing the high, low, and mid-point budget estimates for each life extension program. According to the *2015 Stockpile Stewardship and Management Plan*, the use of a high-low range reflects uncertainties in the estimated budget needed to complete these programs. This additional information provides Congress with more complete and specific information on the amount of funding that may be needed to address uncertainty and risk.

The joint report does not include all budget estimates needed to support planned modernization and sustainment activities, unintentionally omitting approximately \$1.6 billion in budget estimates for two separate programs. With these budget estimates included, DOE’s estimate is \$100.1, or 1.5 percent higher than what was included in the May 2014 report. Specifically, NNSA did not include post-FYNSP funding to operate its Y-12 National Security Complex in Tennessee and its Tritium Readiness program.⁴⁷ In both cases, NNSA officials confirmed that these budget estimates should have been included and provided us with revised data. According to NNSA officials, these budget estimates were inadvertently omitted because they were originally prepared using a fiscal year 2014 budget structure, but the agency submitted its fiscal year 2015 nuclear

⁴⁷The Y-12 National Security Complex is the DOE site that produces uranium-related components for nuclear warheads and bombs, among other things. The Tritium Readiness program aims to establish an assured domestic source of tritium—a key isotope used in nuclear weapons—in order to maintain the U.S. nuclear weapons stockpile.

security budget materials under a revised budget structure. NNSA officials told us that they reviewed the budget estimates to ensure that they had been properly transferred to the new budget structure, but they did not notice the omissions. According to NNSA, the agency did not provide Congress with corrected budget estimates, because when the omitted estimates (\$1.6 billion) were included, the total budget estimate was still within the total cost range reported to Congress in the *Fiscal Year 2015 Stockpile Stewardship Management Plan*. Key principles that we derived from federal budgeting and cost-estimating guidance indicate that long-term funding plans should include all relevant budget estimates regarding a program, in order to assist decision makers as they determine how to allocate resources. These principles also indicate that agencies should develop a process to ensure that high quality information is included in records they disseminate. High quality information includes being accurate and complete. By omitting budget estimates for planned programs and not communicating a correction, DOE underreported the total anticipated cost of its modernization activities, affecting the accuracy and completeness of the information it included.

Agencies Did Not Include Comparative Data or Explain Why Some Budget Estimates in the Joint Report Had Changed from Those in the Prior Year's Report

Although some of the budget estimates changed between the 2013 and the 2014 joint reports, DOD and DOE did not report these changes or the reasons for them in the May 2014 report. Specifically, DOD provided some information on changes to programs, but it did not directly link the information on changes to programs with the budget estimates it provided in the report or provide comparative information regarding the change in budget estimates across years. Table 3 shows changes from the 2013 report to the 2014 report in DOD's 5-year and 10-year estimates for sustaining and modernizing nuclear delivery systems.

Table 3: Changes in the Department of Defense's (DOD) 5-Year and 10-Year Sustainment and Modernization Estimates for Nuclear Delivery Systems from the June 2013 to the May 2014 Joint Report

Then-year Dollars in Billions				
Delivery system	5-Year Dollar Change	5-Year Percent Change	10-Year Dollar Change	10-Year Percent Change
Heavy bombers				
B-2 and B-52	0.4	3	-3.3	-12
New bomber	2.6	30	33.1	—
B61-12 tail kit assembly	0.2	20	-0.2	-13
Cruise missiles				

Then-year Dollars in Billions				
Delivery system	5-Year Dollar Change	5-Year Percent Change	10-Year Dollar Change	10-Year Percent Change
Air-launched cruise missile	0	0	-0.1	-14
Long-range standoff missile	-0.8	-80	0.1	4
Intercontinental ballistic missile (ICBM)				
Minuteman III	0.8	14	0.7	6
Minuteman III replacement	0	0	6.0	—
ICBM fuze modernization	-0.7	-50	-1.8	-56
Dual-capable aircraft				
	0.6	100	1.5	125
Fleet ballistic missile submarine (SSBN)				
Ohio-class submarine	2.4	34	4.6	32
Ohio-replacement submarine	2.4	32	8.6	32
SSBN-X reactor design (NNSA)	0	0	-0.1	-8
Submarine-launched ballistic missile (SLBM) (Trident II)	-1.2	-9	-2.4	-9

Source: GAO analysis of DOD data. | GAO-15-536

DOD's 10-year estimate of \$163.4 billion for nuclear delivery systems reflects an increase of about 40 percent (approximately \$46.7 billion) over the \$116.7 billion estimate in the July 2013 report.⁴⁸ The greatest increase in the 10-year estimate was due to the inclusion of the Air Force's new long-range bomber in the May 2014 report (approximately \$33.1 billion). Additionally, due in part to changes in the Air Force's methodology for developing its 10-year estimates for sustainment budgets for nuclear delivery systems, as discussed earlier, the 10-year estimate for dual-capable aircraft increased 125 percent (or \$1.5 billion)—from \$1.2 billion in the July 2013 report to \$2.7 billion in the May 2014 report.⁴⁹ Air Force officials explained that previous reporting did not include the F-15E aircraft, and they said they anticipate that the F-16 portion of the mission

⁴⁸In the July 2013 joint report, DOD reported a 10-year estimate for strategic delivery systems of \$116.7 billion. However, DOD did not include \$8.8 billion for research and development for a new bomber as part of the 10-year estimate published in the report, even though it had included this amount as part of the \$60.1 billion estimate through fiscal year 2018. Rather than provide potential budget estimates, DOD treated this effort as a zero cost over the 10-year period of the report. See GAO-14-373.

⁴⁹Dual-capable aircraft are fighter aircraft capable of delivering nuclear weapons. The May 2014 joint report estimates include some funding for the F-16C, F-15E, and F-35 aircraft.

will be eliminated and that the F-35 may assume some part of that mission. The biggest change to the Navy's estimates was an increase in the estimate for the Ohio-replacement submarine of about 32 percent (approximately \$8.6 billion)—from \$26.6 billion in the prior report to \$35.2 billion in the May 2014 report. Navy officials said this increase reflects the planned acquisition of one of the submarines.

DOD's 10-year estimate of \$34.6 billion for nuclear command and control systems reflects an overall decrease of about 15 percent (approximately \$6.15 billion) from the \$40.75 billion estimate in the July 2013 report. This decrease is attributable to a reduction in the procurement estimate. Estimates in other appropriations accounts—operation and maintenance and research, development, test, and evaluation—increased, but the amounts by which the estimates increased were less than the amount by which the procurement estimate decreased. The May 2014 report does not discuss the reasons for the changes in these estimates. Officials from DOD's CIO office told us that they completed the purchase of certain equipment within the FYDP period; therefore, the out-year estimates in the May 2014 joint report decreased, because they do not reflect those purchases. The CIO used an inflation factor to determine amounts for the 5-year time frame following the FYDP. As a result, the later year estimates developed with an inflation factor reflect the early purchases, but they may not include potential acquisitions.

DOE's portion of the May 2014 report also does not explain why some estimates have been modified. DOE describes key changes in the 2015 *Stockpile Stewardship and Management Plan*, the more detailed planning document on which DOE's portion of the 2014 report is based. Table 4 shows changes from the 2013 report to the 2014 report in DOE's 5-year and 10-year estimates for modernizing the nuclear stockpile and the nuclear security enterprise.

Table 4: Changes in the Department of Energy's (DOE) 5-Year and 10-Year Modernization Estimates for Nuclear Security Enterprise as of September 2014^a

Then-year Dollars in Billions					
Nuclear Security Enterprise	5-Year Dollar Change	5-Year Percent Change	10-Year Dollar Change	10-Year Percent Change	
Stockpile	2.0	15	-1.8	-5	
Science, technology, & engineering capabilities	0.2	2	1.2	6	
Infrastructure	-1.4	-10	0.3	1	

Then-year Dollars in Billions		5-Year Dollar Change	5-Year Percent Change	10-Year Dollar Change	10-Year Percent Change
Nuclear Security Enterprise	All other weapons activities ^b				
		1.5	22	2.8	21

Source: GAO analysis of DOE data. | GAO-15-536

Note: The information DOE includes in its 2015 *Stockpile Stewardship Management Plan* is presented at a greater level of detail than the information DOE included in the May 2014 joint report.

^aApproximately \$1.6 billion of the budget estimate was inadvertently omitted from the May 2014 joint report. Data in this table are based on corrected data, which includes the previously omitted budget estimates.

^b"All other weapons activities" includes budget estimates associated with nuclear weapons security and transportation as well as legacy contractor pensions, among other things, that are also included in NNSA's Weapons Activities.

DOE's budget estimates also changed. For example, DOE's 10-year budget estimates in the May 2014 joint report increased by about 3 percent (approximately \$2.6 billion) over the estimates in the July 2013 report. In contrast, DOD's 10-year budget estimates in the May 2014 report increased by about 40 percent (approximately \$46.7 billion) over the estimates in the July 2013 report. Therefore, DOE's budget estimates were more consistent and had fewer changes that needed to be explained. The 2015 *Stockpile Stewardship and Management Plan* describes changes in budget estimates for key modernization activities. For example, the 2015 *Stockpile Stewardship and Management Plan* states that NNSA will dedicate less budget estimates towards nuclear weapon life extension programs than the prior year's plan due to, among other things, the impact of sequestration.

DOD officials told us that they did not include information regarding changes in budget estimates from the 2013 report to the 2014 report, because they were not required to do so. Officials from the Office of the Under Secretary of Defense (Policy) told us that, as required by section 1043, the joint report provided a detailed description of any plans to retire, dismantle, or eliminate any nuclear warheads or bombs, nuclear weapons delivery systems, or platforms (including silos and submarines) that carry such nuclear warheads, bombs, or delivery systems. However, officials also said that the information they provided about changes in these plans was not clearly linked to the reported budget estimates or the prior year's estimates. An official from DOD's Cost Assessment and Program Evaluation office added that including more information could be useful in explaining any significant changes in cost estimates that occur during the budget process as a result of programmatic decisions from year to year. This official noted, for example, that in fiscal year 2012 the Ohio-

replacement submarine was delayed by 2 years, which made a significant change in the estimates.⁵⁰

Key principles for preparing long-term funding plans stress the importance of including all relevant costs in the plan, clearly documenting any assumptions and limitations, and disclosing when possible any errors or omissions in the supporting data that affect the quality of the plan's estimates.⁵¹ Because the joint report does not include comparative information and a description of how and why budget estimates have changed from one fiscal year to the next, it does not provide decision makers with the context they need to determine whether there have been significant changes from the prior year—and the reasons for such changes—or an awareness of potential developing trends and risks that they would need to understand to make funding decisions and effectively mitigate risk.

Conclusions

Sustaining and modernizing the U.S. nuclear stockpile (including delivery systems), the nuclear security enterprise, and the NC3 system is a long-term, multifaceted effort that requires resource planning and commitment by both the administration and Congress. This effort is expected to cost close to \$300 billion over the next 10 years. The annual DOD and DOE joint report is one means by which Congress gathers the information it needs to understand the administration's plans to invest in nuclear deterrence capabilities over the long term. Each year the report provides information on sustainment and modernization costs, which can change. For instance, in the May 2014 report, DOD's estimates for nuclear

⁵⁰The joint report must contain a detailed description of the steps taken to implement the plan for the nuclear weapons stockpile, complex, delivery systems, and command and control system submitted in the previous year, including difficulties encountered in implementing the plan in the previous year. See § 1043(a)(2)(G). However, the departments do not include budget estimate changes as part of that discussion.

⁵¹The federal guidance from which we derived these principles includes the following: Executive Office of the President, Office of Management and Budget, *Preparation, Submission, and Execution of the Budget*, Circular No. A-11 (Washington, D.C.: July 2013); V 3.0 *Capital Programming Guide: Supplement to Circular No. A-11: Planning, Budgeting, and Acquisition of Capital Assets* (Washington, D.C.: July 2013); *Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information Disseminated by Federal Agencies*, accessed August 14, 2013, http://www.whitehouse.gov/omb/fedreg_final_information_quality_guidelines; and GAO, *GAO Cost Estimating and Assessment Guide: Best Practices for Developing and Managing Capital Program Costs*, [GAO-09-3SP](http://www.gao.gov/whitepaper/gao-09-3sp.pdf) (Washington, D.C.: Mar. 2, 2009).

delivery systems were 40 percent higher than the estimates in the July 2013 report, due largely to the inclusion of estimates for the new long-range bomber. In order to assess the affordability of these efforts, it is important that Congress have complete and transparent budget estimates. Although the joint report's sustainment and modernization estimates are generally consistent with the departments' internal funding plans, and DOD has included additional information in the current joint report compared to the previous year's report, the usefulness and transparency of the report could be further improved if DOD implemented our previous recommendation to document the methodological assumptions and limitations affecting the NC3 system estimate. Without more thorough documentation of the methodology used to develop the budget estimates, comparative information on any changes in the budget estimates from the prior year, and an explanation of the reasons for those changes, Congress may have difficulty understanding the basis for the estimates or comparing estimates across fiscal years. Moreover, decision makers might not be fully aware of developing trends and potential risks that they would need to consider in making funding decisions and developing effective risk mitigation strategies.

Recommendations for Executive Action

To provide decision makers with better insight and additional context to identify any significant changes to the estimates in the joint report from the prior year and understand the reasons for such changes, and to improve the completeness and transparency of the budget estimates in the report, we recommend that, for future joint reports, the Secretary of Defense direct the Secretary of the Air Force, the Secretary of the Navy, and the DOD CIO, and the Secretary of Energy direct the Administrator of NNSA to take the following two actions:

- provide more thorough documentation in the joint report on the methodologies used to develop the budget estimates, including information that may be available in related planning documents, and ensure the accuracy and completeness of the information included and
- provide comparative information on changes in the budget estimates from the prior year and explain the reasons for those changes.

Agency Comments and Our Evaluation

We provided DOD and DOE with copies of our draft report for their review and comment. In response, we received written comments from both departments, which are reprinted in appendixes II and III, respectively.

Both departments also provided technical comments that have been incorporated as appropriate.

DOD and DOE concurred with our first recommendation that the Secretary of Defense direct the Secretary of the Air Force, the Secretary of the Navy, and the DOD CIO, and the Secretary of Energy direct the Administrator of NNSA to provide more thorough documentation in the joint report on the methodologies used to develop the budget estimates and ensure the accuracy and completeness of the information included. In its written comments, DOD stated that it added information on the methodologies used to develop the estimates in the most recent joint report, released in April 2015, and that it would consider including further information in subsequent reports. However, neither department provided information on steps it would take to ensure the accuracy and completeness of the information included in future joint reports. We continue to believe that the joint reports should include accurate and complete budget estimates.

DOD partially concurred and DOE concurred with our second recommendation that the Secretary of Defense direct the Secretary of the Air Force, the Secretary of the Navy, and the DOD CIO, and the Secretary of Energy direct the Administrator of NNSA to provide comparative information on any changes in the budget estimates from the prior year and explain the reasons for those changes. However, both agencies stated that the explanations of the changes should only be necessary for “substantive” or “significant” changes rather than for “any” changes from the prior year. Neither department stated how it would define “substantive” or “significant” changes, but DOD noted that changes in estimates may stem from minor changes in execution of funding rather than from policy or programmatic change. We agree. In response, we revised our second recommendation to remove the word “any” to reflect both departments’ preferences about reporting on the nature of changes in the estimates. In addition, DOD stated that Section 1043 of the National Defense Authorization Act (NDAA) for Fiscal Year 2012 does not require a comparative year-to-year analysis, and recommended that Congress amend the existing Section 1043 language to require that the report include an additional subsection providing a quantitative comparison of current budget estimates with the previous year’s data. While Section 1043 does not require a comparative year-to-year analysis, the departments are not restricted from including such information in the joint report. We continue to believe that providing comparative information on changes in the budget estimates from year-to-year and explanations for the changes would be beneficial to congressional decision makers and

note that the DOD and DOE could provide such information without an amendment to the existing statute.

We are sending this report to the appropriate congressional committees and to the Secretary of Defense; Chairman, Joint Chiefs of Staff; Secretary of the Air Force; Secretary of the Navy; Secretary of Energy; and Administrator of NNSA. This report is also available at no charge on the GAO website at <http://www.gao.gov>.

Should you or your staffs have any questions about this report, please contact Joe Kirschbaum at (202) 512-9971 or kirschbaumj@gao.gov, or David Trimble at (202) 512-3841 or trimbled@gao.gov. Contact points for our Offices of Congressional Relations and Public Affairs may be found on the last page of this report. GAO staff who made contributions to the report are listed in appendix IV.



Joseph H. Kirschbaum
Director
Defense Capabilities and Management



David C. Trimble
Director
Natural Resources and Environment

List of Committees

The Honorable John McCain
Chairman
The Honorable Jack Reed
Ranking Member
Committee on Armed Services
United States Senate

The Honorable Thad Cochran
Chairman
The Honorable Richard Durbin
Ranking Member
Subcommittee on Defense
Committee on Appropriations
United States Senate

The Honorable Lamar Alexander
Chairman
Subcommittee on Energy and Water Development
The Honorable Dianne Feinstein
Ranking Member
Committee on Appropriations
United States Senate

The Honorable “Mac” Thornberry
Chairman
The Honorable Adam Smith
Ranking Member
Committee on Armed Services
House of Representatives

The Honorable Rodney Frelinghuysen
Chairman
The Honorable Pete Visclosky
Ranking Member
Subcommittee on Defense
Committee on Appropriations
House of Representatives

The Honorable Mike Simpson
Chairman
The Honorable Marcy Kaptur
Ranking Member
Subcommittee on Energy and Water Development
Committee on Appropriations
House of Representatives

Appendix I: Objectives, Scope, and Methodology

We reviewed the May 7, 2014, joint report to congressional committees from the Department of Defense (DOD) and Department of Energy (DOE). The joint report describes the departments' plans and 10-year budget estimates for sustaining and modernizing U.S. nuclear weapons capabilities. Section 1043 of the National Defense Authorization Act for Fiscal Year 2012, as amended, requires us to review each joint report for accuracy and completeness with respect to the budget estimates and the methodologies used to develop them.¹ We assessed the extent to which the joint report provides (1) budget estimates for nuclear weapons sustainment and modernization that are consistent with DOD's and DOE's internal funding plans and nuclear modernization plans and (2) complete and transparent information on the methodology used to develop these budget estimates. To address our objectives, we followed a methodology similar to the one we used during our review of the July 2013 joint report.² We assessed the accuracy and completeness of the budget estimates in the report by determining whether they were consistent with department internal funding plans and whether the report provides complete information and includes a transparent methodology for how the estimates were developed. We examined the departments' plans and budget estimates for sustaining and modernizing the nuclear deterrent in three areas: (1) DOD nuclear delivery systems, (2) the DOD NC3 system, and (3) DOE nuclear security enterprise modernization.

To assess whether the estimates for nuclear sustainment and modernization are consistent with DOD's and DOE's internal funding plans and long-term nuclear modernization plans we compared the plans and estimates in the May 2014 joint report with each department's funding plans. For our review of DOD's estimates for nuclear delivery systems and the NC3 system, we compared the estimates in the May 2014 joint report with funding plans in the Future Years Defense Program (FYDP).³ Because DOD had not prepared internal funding plans to be

¹See Pub. L. No. 112-81, § 1043(c) (as amended).

² We previously reported on the July 2013 joint report in June 2014. GAO, *Nuclear Weapons: Ten-Year Budget Estimates for Modernization Omit Key Efforts, and Assumptions and Limitations Are Not Fully Transparent*, GAO-14-373 (Washington, D.C.: June 10, 2014).

³The FYDP is a centralized DOD report that is updated annually and provides DOD's current budget request and budget estimates for at least 4 subsequent fiscal years. The FYDP includes thousands of discrete program elements, each of which may include funding projections for DOD appropriations accounts, including research, development, test, and evaluation; procurement; and operation and maintenance.

used to project estimated budget requests beyond fiscal year 2019, and the May 2014 joint report includes budget estimates through fiscal year 2024, we reviewed Air Force, Navy, and Defense Information Systems Agency (DISA) plans, including the Nuclear Command, Control, and Communications (C3) Program Tracking Report, and we discussed DOD's long-term budget estimates in the joint report with relevant DOD officials. At DOD, we met with officials from a range of offices responsible for developing the department's contributions to the joint report. In addition to the Air Force, Navy, and Department of Defense Chief Information Officer (DOD CIO), we met with officials from the Office of the Under Secretary of Defense (Policy); Office of the Under Secretary of Defense (Comptroller); Office of the Director, Cost Assessment and Program Evaluation; Joint Staff; and U.S. Strategic Command. For our review of DOE's plans and estimates, we compared DOE's estimates in the joint report with the NNSA's funding plans in the Future Years Nuclear Security Program (FYNSP) and the *Fiscal Year 2015 Stockpile Stewardship and Management Plan*, which includes estimated funding requirements for NNSA's modernization plans that cover the time required for the joint report and beyond.⁴ We determined the estimates in the May 2014 joint report to be sufficiently accurate and complete if they were consistent with the departments' funding plans, including the FYDP and FYNSP.⁵ We have previously reported on DOD's and DOE's challenges in generating reliable budget estimates and programming data.⁶

⁴Department of Energy, *Fiscal Year 2015 Stockpile Stewardship and Management Plan Report to Congress* (Washington, D.C.: April 2014). The *Stockpile Stewardship and Management Plan* is NNSA's formal means for communicating to Congress the status of certain activities and its long-range plans and budget estimates for sustaining the stockpile and modernizing the nuclear security enterprise. The *Stockpile Stewardship and Management Plan* includes 25-year budget estimates for NNSA's plans.

⁵We did not assess the overall reliability of DOD's and DOE's internal funding plans themselves or the departments' underlying budget-estimating process, because such analysis exceeded the scope of our mandate. We also did not independently verify the reliability of DOD's or DOE's specific budget estimates.

⁶GAO, *Department of Energy: Observations on Project and Program Cost Estimating in NNSA and the Office of Environmental Management*, GAO-13-510T (Washington, D.C.: May 8, 2013); *Modernizing the Nuclear Security Enterprise: NNSA's Reviews of Budget Estimates and Decisions on Resource Trade-offs Need Strengthening*, GAO-12-806 (Washington, D.C.: July 31, 2012); and *DOD Weapon Systems: Missed Trade-off Opportunities During Requirements Reviews*, GAO-11-502 (Washington, D.C.: June 16, 2011).

To assess whether the May 2014 joint report includes complete and transparent information from DOD and DOE for nuclear sustainment and modernization budget estimates, we drew on work we performed for our June 2014 report, in which we reviewed the July 2013 joint report. At DOD, we obtained Air Force, Navy, and DOD CIO documentation of the methodologies they used to create DOD's 10-year estimates for sustaining and modernizing nuclear delivery systems and the NC3 system. We also obtained guidance in the form of e-mails and a briefing from the Office of the Under Secretary of Defense for Policy, as well as tasking documents from the Joint Staff, and we interviewed officials from that office and from the Joint Staff and U.S. Strategic Command. For DOE, we drew upon our current work reviewing the *Fiscal Year 2015 Stockpile Stewardship and Management Plan* to prepare the plans and estimates in the joint report for sustaining and modernizing the nuclear security enterprise and nuclear weapons stockpile.⁷ We also met with NNSA officials to discuss how the joint report was prepared. We then compared the information in the joint report with key principles for developing and preparing long-term funding plans that we derived by reviewing key federal and departmental guidance, standards, and practices for cost estimating, budget preparation, financial planning, and public reporting. Such federal guidance included Circular No. A-11, *Preparation, Submission, and Execution of the Budget*,⁸ *Capital Programming Guide Version 3.0*,⁹ and *Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility and Integrity of Information Disseminated by Federal Agencies*,¹⁰ all published by the Office of Management and Budget, as well as the GAO *Cost Estimating and*

⁷We have ongoing work looking at whether NNSA's nuclear security budget materials provide for funding that is sufficient to modernize and refurbish the nuclear security enterprise as well as recapitalize its infrastructure. As we finalize work in this area, we plan to issue a final report by August 2015.

⁸Executive Office of the President, Office of Management and Budget, *Preparation, Submission, and Execution of the Budget*, Circular No. A-11 (Washington, D.C.: July 2013).

⁹Executive Office of the President, Office of Management and Budget, *V 3.0 Capital Programming Guide: Supplement to Circular No. A-11: Planning, Budgeting, and Acquisition of Capital Assets* (Washington, D.C.: July 2013).

¹⁰Executive Office of the President, Office of Management and Budget, *Guidelines for Ensuring and Maximizing the Quality, Objectivity, Utility, and Integrity of Information Disseminated by Federal Agencies*, accessed August 14, 2013, http://www.whitehouse.gov/omb/fedreg_final_information_quality_guidelines.

*Assessment Guide.*¹¹ To the extent that we determined there were differences between the principles we derived and information that was provided in the May 2014 joint report, we discussed the causes and potential effects of these differences with relevant DOD and DOE officials. At DOD, we met with officials from the Air Force; Navy; DOD CIO; the Office of the Under Secretary of Defense (Policy); Office of the Under Secretary of Defense (Comptroller); Office of the Director, Cost Assessment and Program Evaluation; Joint Staff; and U.S. Strategic Command. At DOE, we met with officials in the Office of Defense Programs and the Office for Safety and Infrastructure Operations.

We conducted this performance audit from July 2014 to July 2015 in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

¹¹GAO, *GAO Cost Estimating and Assessment Guide: Best Practices for Developing and Managing Capital Program Costs*, GAO-09-3SP (Washington, D.C.: Mar. 2, 2009).

Appendix II: Comments from the Department of Defense

GAO received DOD's letter on July 16, 2015.



ASSISTANT SECRETARY OF DEFENSE

2400 DEFENSE PENTAGON
WASHINGTON, D.C. 20301-2400

STRATEGY, PLANS
AND CAPABILITIES

Mr. Joseph Kirschbaum
Director, Defense Capabilities Management
U.S. Government Accountability Office
441 G Street, NW
Washington, DC 20548

Dear Mr. Kirschbaum:

This is the Department of Defense (DoD) response to the GAO Draft Report, GAO-15-536, "NUCLEAR WEAPONS SUSTAINMENT: Improvements Made to Budget Estimates, but Opportunities Exist to Further Enhance Transparency," dated June 4, 2015 (GAO Code 351964).

The Department is providing its official written response to recommendations and providing comments for inclusion in the report. Thank you for your review and consideration.

Sincerely,

A handwritten signature in black ink, appearing to read "Robert M. Scher".

Robert M. Scher

Attachment:

TAB A: DoD Response to GAO Recommendations
TAB B: DoD comments

**GAO DRAFT REPORT DATED JUNE 4, 2015
GAO-15-536 (GAO CODE 351964)**

**“NUCLEAR WEAPONS SUSTAINMENT: Improvements Made to Budget Estimates, but
Opportunities Exist to Further Enhance Transparency”**

**DEPARTMENT OF DEFENSE COMMENTS
TO THE GAO RECOMMENDATION**

RECOMMENDATION 1: The GAO recommends that the Secretary of Defense direct the Secretary of the Air Force, the Secretary of the Navy, and the DoD Chief Information Officer to provide more thorough documentation in the joint report on methodologies used to develop the budget estimates, including information that may be available in related planning documents, and ensure the accuracy and completeness of information included.

DoD RESPONSE: DoD concurs with the GAO recommendation stated above. To that end, DoD added in the most recent Fiscal Year 2016 joint report information regarding the methodologies utilized and will consider including further information in subsequent reports.

RECOMMENDATION 2: The GAO recommends that the Secretary of Defense direct the Secretary of the Air Force, the Secretary of the Navy, and the DoD Chief Information Officer to provide comparative information on any changes in the budget estimates from the prior year and explain the reason for those changes.

DoD RESPONSE: DoD partially concurs with the GAO recommendation stated above. Applicable language in Section 1043 of the National Defense Authorization Act (NDAA) for Fiscal Year 2012 does not require a comparative year-to-year analysis. DoD recommends amending the existing Section 1043 language to provide that the report should include an additional subsection providing a quantitative comparison of current budget estimates with the previous year's data. Additionally, in many cases such fluctuations might stem from minor changes in execution of funding, rather than from any policy or programmatic change. Thus, should Congress decide to amend the Section 1043 language to require such a year-to-year comparison, DoD would recommend that explanations be required only for substantive changes in budget estimates rather than any change.

Appendix III: Comments from the Department of Energy

DOE's enclosure is not included in this appendix.



Department of Energy
Under Secretary for Nuclear Security
Administrator, National Nuclear Security Administration
Washington, DC 20585



July 17, 2015

Mr. David C. Trimble
Director, Natural Resources
and Environment
U.S. Government Accountability Office
Washington, DC 20548

Dear Mr. Trimble:

Thank you for the opportunity to review the Government Accountability Office's (GAO) draft report titled "*Nuclear Weapons Sustainment: Improvements Made to Budget Estimates, but Opportunities Exist to Further Enhance Transparency*" GAO-15-536. The National Nuclear Security Administration (NNSA) concurs with GAO's recommendation to provide more thorough documentation of the methodologies used to develop estimates in the future. NNSA also concurs with the GAO recommendation to provide comparative information on significant changes to the budget estimates from the previous year. This action should be completed by March 2016 with the issuance of the fiscal year (FY) 2016 1043 report.

We have also provided technical and general comments under separate cover for your consideration to enhance the clarity and accuracy of the report. If you have any questions regarding this response, please contact Dean Childs, Director, Audit Coordination and Internal Affairs, at (301) 903-1341.

Sincerely,

Frank G. Klotz

Enclosure



Appendix IV: GAO Contacts and Staff Acknowledgments

GAO Contacts

Joseph W. Kirschbaum, (202) 512-9971 or kirschbaumj@gao.gov
David C. Trimble, (202) 512-3841 or trimbled@gao.gov

Staff Acknowledgments

In addition to the contacts named above, Penney Harwell Caramia, Assistant Director; Allison B. Bawden, Assistant Director; Jennifer Andreone, Patrick Bernard, Neil Feldman, Tom Fullum, Joanne Landesman, Amie Lesser, Joshua Margraf, Michael Shaughnessy, Michael Silver, and Jason Trentacoste made key contributions to this report.

GAO's Mission

The Government Accountability Office, the audit, evaluation, and investigative arm of Congress, exists to support Congress in meeting its constitutional responsibilities and to help improve the performance and accountability of the federal government for the American people. GAO examines the use of public funds; evaluates federal programs and policies; and provides analyses, recommendations, and other assistance to help Congress make informed oversight, policy, and funding decisions. GAO's commitment to good government is reflected in its core values of accountability, integrity, and reliability.

Obtaining Copies of GAO Reports and Testimony

The fastest and easiest way to obtain copies of GAO documents at no cost is through GAO's website (<http://www.gao.gov>). Each weekday afternoon, GAO posts on its website newly released reports, testimony, and correspondence. To have GAO e-mail you a list of newly posted products, go to <http://www.gao.gov> and select "E-mail Updates."

Order by Phone

The price of each GAO publication reflects GAO's actual cost of production and distribution and depends on the number of pages in the publication and whether the publication is printed in color or black and white. Pricing and ordering information is posted on GAO's website, <http://www.gao.gov/ordering.htm>.

Place orders by calling (202) 512-6000, toll free (866) 801-7077, or TDD (202) 512-2537.

Orders may be paid for using American Express, Discover Card, MasterCard, Visa, check, or money order. Call for additional information.

Connect with GAO

Connect with GAO on [Facebook](#), [Flickr](#), [Twitter](#), and [YouTube](#). Subscribe to our [RSS Feeds](#) or [E-mail Updates](#). Listen to our [Podcasts](#). Visit GAO on the web at www.gao.gov.

To Report Fraud, Waste, and Abuse in Federal Programs

Contact:

Website: <http://www.gao.gov/fraudnet/fraudnet.htm>

E-mail: fraudnet@gao.gov

Automated answering system: (800) 424-5454 or (202) 512-7470

Congressional Relations

Katherine Siggerud, Managing Director, siggerudk@gao.gov, (202) 512-4400, U.S. Government Accountability Office, 441 G Street NW, Room 7125, Washington, DC 20548

Public Affairs

Chuck Young, Managing Director, youngc1@gao.gov, (202) 512-4800 U.S. Government Accountability Office, 441 G Street NW, Room 7149 Washington, DC 20548



Please Print on Recycled Paper.